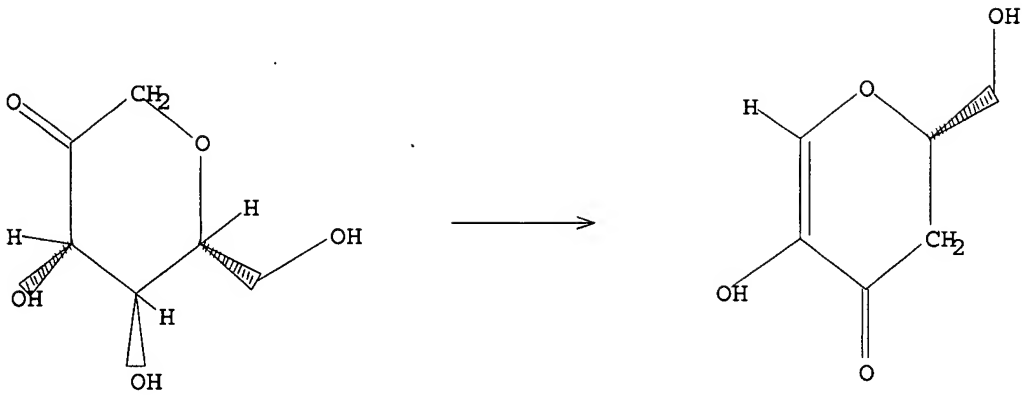
```
=> d his

     (FILE 'HOME' ENTERED AT 14:19:06 ON 16 JUL 2007)

     FILE 'CASREACT' ENTERED AT 14:19:25 ON 16 JUL 2007
L1                STRUCTURE UPLOADED
L2              0 S L1 SSS SAM
L3              2 S L1 SSS FULL
                  E ASCOPYRONE P/CN

     FILE 'REGISTRY' ENTERED AT 14:29:23 ON 16 JUL 2007
                  E ASCOPYRONE P/CN
L4              1 S E3

     FILE 'CAPLUS, MEDLINE' ENTERED AT 14:30:25 ON 16 JUL 2007
L5             35 S L4
L6             12 S L5 AND ?ANHYDROFRUCTOSE?
L7             23 S L5 NOT L6
L8             18 S ASCOPYRONE P (P) ?ANHYDROFRUCTOSE?
L9              6 S L8 NOT L5
```

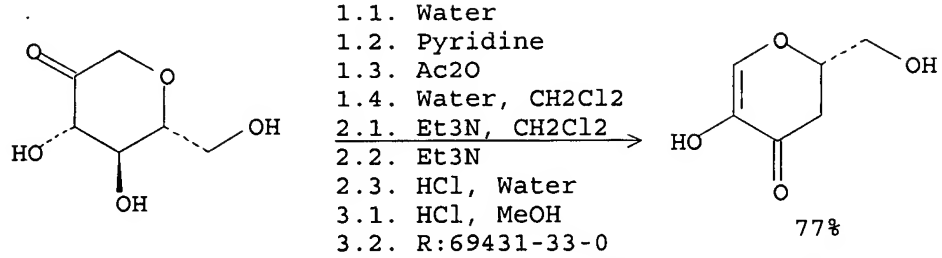
=> d L1
L1 HAS NO ANSWERS
L1 STR



Structure attributes must be viewed using STN Express query preparation.

L3 ANSWER 1 OF 2 CASREACT COPYRIGHT 2007 ACS on STN

RX(10) OF 11 - 3 STEPS

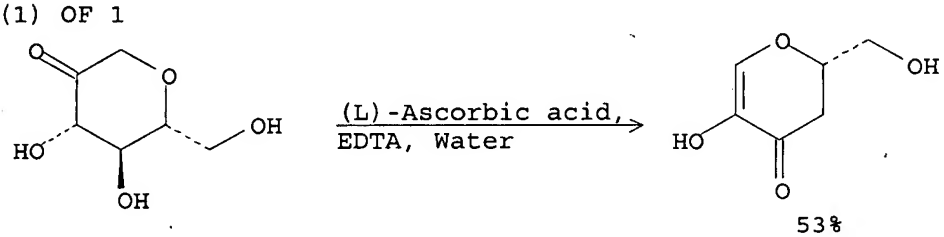


REF: Carbohydrate Research, 341(10), 1692-1696; 2006
NOTE: 1) stereoselective, workup
CON: STEP(1.1) 2 hours, 25 deg C
STEP(1.2) room temperature -> 0 deg C
STEP(1.3) 2 hours, room temperature
STEP(1.4) room temperature
STEP(2.1) 0 deg C; 0 deg C -> room temperature; 0.5 hours, room temperature
STEP(2.2) 15 hours, room temperature
STEP(3.1) overnight, room temperature
STEP(3.2) room temperature

ACCESSION NUMBER: 145:211227 CASREACT
TITLE: A new chemical synthesis of Ascopyrone P from 1,5-anhydro-D-fructose
AUTHOR(S): Andreassen, Mikkel; Lundt, Inge
CORPORATE SOURCE: Department of Chemistry, Technical University of Denmark, Kgs. Lyngby, DK-2800, Den.
SOURCE: Carbohydrate Research (2006), 341(10), 1692-1696
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The naturally occurring antioxidant Ascopyrone P (1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose) was prepared from the rare sugar 1,5-anhydro-D-fructose (I) in three steps in an overall yield of 36%. Thus, acetylation of I afforded the enolone 3,6-di-O-acetyl-1,5-anhydro-4-deoxy-D-glycero-hex-3-en-2-ulopyranose, which could be isomerized to 2,6-di-O-acetyl-1,5-anhydro-4-deoxy-D-glycero-hex-1-ene-3-ulose (II). Deacetylation of II under mild conditions gave crystalline Ascopyrone P.
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 2 CASREACT COPYRIGHT 2007 ACS on STN

RX(1) OF 1



REF: PCT Int. Appl., 2005049599, 02 Jun 2005
NOTE: alternative prepn. shown
CON: 15 minutes, 145 deg C

ACCESSION NUMBER: 143:26421 CASREACT
TITLE: Method for efficiently producing ascopyrone P
INVENTOR(S): Yoshinaga, Kazuhiro; Kawano, Chinami
PATENT ASSIGNEE(S): Nihon Starch Co., Ltd., Japan
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

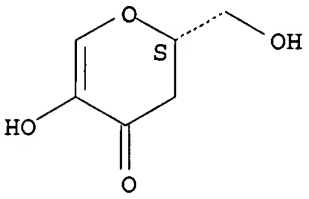
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005049599	A1	20050602	WO 2004-JP17513	20041118
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1690859	A1	20060816	EP 2004-799802	20041118
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1882559	A	20061220	CN 2004-80034200	20041118
US 2007077618	A1	20070405	US 2006-579978	20060522
PRIORITY APPLN. INFO.:			JP 2003-391132	20031120
			WO 2004-JP17513	20041118

AB The title method comprises heating a solution of 1,5-D-anhydrofructose to ≥ 100°C at pH 10 or lower. Ascopyrone P is useful as a food additive (no data). Thus, an aqueous solution of 1,5-D-anhydrofructose at pH 3 was heated at 121°C for 30 min to give ascopyrone P (I) : the formation rate of I was about 35%. An aqueous solution of 1,5-D-anhydrofructose at pH 9 was heated at 121°C for 30 min to give I : the formation rate of I was about 10%.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2007 ACS on STN
RN 68732-99-0 REGISTRY
ED Entered STN: 16 Nov 1984
CN 4H-Pyran-4-one, 2,3-dihydro-5-hydroxy-2-(hydroxymethyl)-, (2S)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 4H-Pyran-4-one, 2,3-dihydro-5-hydroxy-2-(hydroxymethyl)-, (S)-
OTHER NAMES:
CN 1,5-Anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose
CN Ascopyrone P
FS STEREOSEARCH
MF C6 H8 O4
LC STN Files: AGRICOLA, BEILSTEIN*, BIOSIS, CA, CAPLUS, CASREACT, CHEMLIST, TOXCENTER, USPAT2, USPATFULL
(*File contains numerically searchable property data)

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

35 REFERENCES IN FILE CA (1907 TO DATE)
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
35 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L6 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1059923 CAPLUS
DOCUMENT NUMBER: 145:389356
TITLE: Antitumor drugs comprising anhydrofructose and vitamin A
INVENTOR(S): Abeyama, Kazuhiro; Maruyama, Ikuo; Yoshimoto, Yasushi; Yoshinaga, Kazuhiro
PATENT ASSIGNEE(S): Nihon Denpun Kogyo K. K., Japan; Kagoshima University
SOURCE: Jpn. Kokai Tokkyo Koho, 9pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006273751	A	20061012	JP 2005-95146	20050329
PRIORITY APPLN. INFO.:			JP 2005-95146	20050329

AB An antitumor drug or kit comprises (1) 1,5-D-anhydrofructose and/or ascopyrone P and (2) vitamin A and vitamin A derivs.

L6 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:1185247 CAPLUS
DOCUMENT NUMBER: 144:87182
TITLE: Examination of 1,5-anhydro-D-fructose and the enolone ascopyrone P, metabolites of the anhydrofructose pathway of glycogen and starch degradation, for their possible application in fruits, vegetables, and beverages as antibrowning agents
AUTHOR(S): Yuan, Yongbing; Mo, Shuxia; Cao, Rong; Westh, Birgitte Claudi; Yu, Shukun
CORPORATE SOURCE: Agricultural Produce Quality and Safety Laboratory, Laiyang Agricultural University, Qingdao, 266109, Peop. Rep. China
SOURCE: Journal of Agricultural and Food Chemistry (2005), 53(24), 9491-9497
CODEN: JAFCAU; ISSN: 0021-8561
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The anhydrofructose pathway describes the degradation of glycogen and starch to 1,5-anhydro-D-fructose (1,5AnFru) and its further conversion to the enolone ascopyrone P (APP) via the transit intermediate ascopyrone M. The two products, 1,5AnFru and APP, were examined in this study for their effects in controlling the browning of selected fruits, vegetables, and beverages. The results showed that 1,5AnFru had an antibrowning effect in green tea and was able to slow turbidity development in black currant wine. APP proved to be an antibrowning agent comparable to kojic acid. It showed an antibrowning effect in a range of agricultural products, such as various cultivars of apple, pear, potato, lettuce, and varieties of green tea in an efficacy concentration range from 300 to 500 ppm. Mechanism studies indicated that, like kojic acid, APP showed inhibition toward plant polyphenol oxidase and was able to decolor quinones.
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:472145 CAPLUS
DOCUMENT NUMBER: 143:26421
TITLE: Method for efficiently producing ascopyrone P
INVENTOR(S): Yoshinaga, Kazuhiro; Kawano, Chinami
PATENT ASSIGNEE(S): Nihon Starch Co., Ltd., Japan

SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005049599	A1	20050602	WO 2004-JP17513	20041118
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1690859	A1	20060816	EP 2004-799802	20041118
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1882559	A	20061220	CN 2004-80034200	20041118
US 2007077618	A1	20070405	US 2006-579978	20060522

PRIORITY APPLN. INFO.: JP 2003-391132 A 20031120
WO 2004-JP17513 W 20041118

OTHER SOURCE(S): CASREACT 143:26421

AB The title method comprises heating a solution of 1,5-D-anhydrofructose to ≥ 100°C at pH 10 or lower.
Ascopyrone P is useful as a food additive (no data). Thus, an aqueous solution of 1,5-D-anhydrofructose at pH 3 was heated at 121°C for 30 min to give ascopyrone P (I) : the formation rate of I was about 35%.
An aqueous solution of 1,5-D-anhydrofructose at pH 9 was heated at 121°C for 30 min to give I : the formation rate of I was about 10%.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:395295 CAPLUS
DOCUMENT NUMBER: 142:441849
TITLE: Antitumor agent
INVENTOR(S): Maruyama, Ikurou; Abeyama, Kazuhiro; Yoshimoto, Yasushi
PATENT ASSIGNEE(S): Nihon Starch Co., Ltd., Japan
SOURCE: PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005040147	A1	20050506	WO 2004-JP16354	20041028
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,				

EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

JP 2005154425	A	20050616	JP 2004-313560	20041028
EP 1686122	A1	20060802	EP 2004-793334	20041028
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1871227	A	20061129	CN 2004-80031546	20041028
US 2007135517	A1	20070614	US 2006-577447	20060427
PRIORITY APPLN. INFO.:			JP 2003-366798 A	20031028
			WO 2004-JP16354 W	20041028

AB Claimed is an antitumor agent comprising 1,5-D-anhydrofructose and/or ascopyrone. The anti-melanoma activities of 1,5-D-anhydrofructose and ascopyrone P were demonstrated in mice.

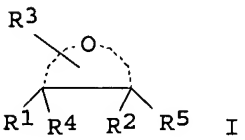
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:855663 CAPLUS
DOCUMENT NUMBER: 139:349964
TITLE: Anhydrofructose derivative antimicrobial agents for food use.
INVENTOR(S): Elsser, Dieter; Morgan, Andrew John; Thomas, Linda Valerie; Yu, Shukun
PATENT ASSIGNEE(S): Germany
SOURCE: U.S. Pat. Appl. Publ., 31 pp., Cont.-in-part of Appl. No. PCT/GB01/04328.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003203963	A1	20031030	US 2003-396003	20030325
WO 2002026060	A1	20020404	WO 2001-GB4328	20010927
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRIORITY APPLN. INFO.:			GB 2000-23686 A	20000927
			GB 2000-23687 A	20000927
			WO 2001-GB4328 A2	20010927

OTHER SOURCE(S): MARPAT 139:349964
GI



I

AB The present invention provides an antimicrobial composition for use against a microorganism selected from Listeria, Salmonella, Bacillus, Saccharomyces, Pseudomonas, Clostridium, Lactobacillus, Brochothrix, Micrococcus,

Yersinia, Enterobacter and Zygosaccharomyces, said composition comprising a cyclic compound having Formula (I), or a derivative thereof, wherein R1 and R2 are independently selected from -OH, =O, and -OR', wherein R' is H or -COR'', and R'' is C1-10 alkyl; wherein R3 is a substituent comprising an OH-group, wherein R4 and R5 are each independently selected from a hydrocarbyl group, H, OH or =O, or represent a bond with an adjacent atom on the ring of the cyclic compound The invention further relates to a process preventing and/or inhibiting the growth of, and/or killing, microorganisms in a material, and the use of a cyclic compound having Formula (I).

L6 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:356601 CAPLUS
DOCUMENT NUMBER: 138:364738
TITLE: Purification and characterization of 1,5-anhydro-D-fructose dehydratase from Anthracobia melaloma and its use for production of ascopyrone P and M and cortalcerone
INVENTOR(S): Morgan, Andrew John; Refdahl, Charlotte; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 79 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2003038085	A1	20030508	WO 2002-GB4951		20021030
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
US 2003170829	A1	20030911	US 2002-283987		20021030
US 2003232417	A1	20031218	US 2002-283963		20021030
PRIORITY APPLN. INFO.:			GB 2001-26165	A	20011031
			US 2001-343447P	P	20011221
			GB 2001-26162	A	20011031
			US 2001-343313P	P	20011221
			US 2001-343316P	P	20011221
			US 2001-343368P	P	20011221
			US 2001-343485P	P	20011221

AB The present invention relates to the purification and characterization of 1,5-anhydro-D-fructose dehydratase from the fungus Anthracobia melaloma. Anhydrofructose dehydratase (AFDH) was purified from Anthracobia melaloma with a purification factor of 409 fold achieved in 5 purification steps.

AFDH showed a mol. mass of 98.5 kDa on SDS gel electrophoresis and 228 kDa by gel filtration chromatog. on a Superdex-200 column. AFDH preferred anhydrofructose (AF) over its natural substrate D-glucosone. The concns. of AF and D-glucosone that yielded half of the maximum activity were 12.62 mM and 27.58 mM, resp. Vmax was estimated to be 769 units for AF and 416 units for D-glucosone. AFDH had an optimal pH range of 5.9 to 7.0 with an optimal activity at pH 6.7. AFDH had an optimum temperature range between 34° and 46° with an optimum temperature at 38°.

The metal ions Ca2+, Mg2+ and Na+ all increased the AFDH activity, while Zn2+, EDTA and DTT inhibited the enzyme. FDH can therefore be used for

the production of ascopyrone M from AF, the precursor for ascopyrone P. Due to the discovery of AFDH converting glucosone, AFDH can therefore also be used for the production of the antimicrobial cortalcerone.

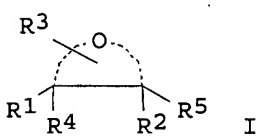
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:356457 CAPLUS
DOCUMENT NUMBER: 138:362636
TITLE: Antimicrobial use of anhydrofructose derivatives
INVENTOR(S): Buchter-Larsen, Aksel; Morgan, Andrew John; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003037906	A1	20030508	WO 2002-GB4914	20021030
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003187064	A1	20031002	US 2002-283936	20021030
US 2003232417	A1	20031218	US 2002-283963	20021030
EP 1440078	A1	20040728	EP 2002-772582	20021030
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

PRIORITY APPLN. INFO.:		
GB 2001-26186	A	20011031
US 2001-343368P	P	20011221
GB 2001-26162	A	20011031
US 2001-343313P	P	20011221
US 2001-343316P	P	20011221
US 2001-343447P	P	20011221
US 2001-343485P	P	20011221
WO 2002-GB4914	W	20021030

OTHER SOURCE(S): MARPAT 138:362636
GI



I

AB The invention provides use in medicine of a cyclic compound I (R1, R2 = OH, =O, OR'; R' = H, -COR"; R" = C1-10 alkyl; R3 = substituent comprising OH; R4, R5 = hydrocarbyl, H, OH, =O, bond with adjacent atom on ring of cyclic compound), or a derivative thereof. The invention further relates to an antimicrobial for use against Bacillus anthracis of I.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS

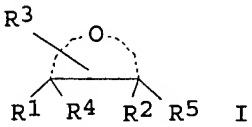
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 8 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:256007 CAPLUS
DOCUMENT NUMBER: 136:278465
TITLE: Anhydrofructose derivative antimicrobial agents for food preservation
INVENTOR(S): Elsser, Dieter; Morgan, Andrew John; Thomas, Linda Valerie; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002026061	A1	20020404	WO 2001-GB4330	20010927
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2423139	A1	20020404	CA 2001-2423139	20010927
AU 2001090135	A5	20020408	AU 2001-90135	20010927
GB 2381456	A	20030507	GB 2003-2415	20010927
GB 2381456	B	20040804		
EP 1322189	A1	20030702	EP 2001-970015	20010927
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509908	T	20040402	JP 2002-529896	20010927
NZ 523687	A	20050324	NZ 2001-523687	20010927

PRIORITY APPLN. INFO.:	GB 2000-23686	A	20000927
	GB 2000-23687	A	20000927
	WO 2001-GB4330	W	20010927

OTHER SOURCE(S): MARPAT 136:278465
GI



I

AB The present invention provides an antimicrobial composition, containing especially anhydrofructose derivs., comprising a cyclic compound having Formula I, wherein R1 and R2 are independently selected from -OH, =O, and -OC(O)R', wherein R' is a hydrocarbyl group; wherein R3 is selected from -OH, =O, a substituent comprising an -OH group and -OC(O)R', wherein R' is a H or a hydrocarbyl group, wherein R4 and R5 are each independently selected from a hydrocarbyl group, H, OH, =O, and -OC(O)R', wherein R' is a H or a hydrocarbyl group or wherein R4 and R5 represent a bond with an adjacent atom on the ring of the cyclic compound; and wherein said compound comprises at least one ester group. The invention further relates to a

process for preventing and/or inhibiting the growth of, and/or killing, microorganisms in a material, and the use of a cyclic compound having Formula I.

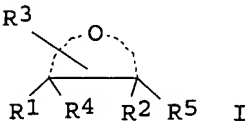
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 9 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:256006 CAPLUS
DOCUMENT NUMBER: 136:293912
TITLE: Anhydrofructose derivatives as antimicrobial agents for food spoilage and pathogenic microorganisms
INVENTOR(S): Elsser, Dieter; Morgan, Andrew John; Thomas, Linda Valerie; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 57 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002026060	A1	20020404	WO 2001-GB4328	20010927
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2423134	A1	20020404	CA 2001-2423134	20010927
AU 2001090133	A5	20020408	AU 2001-90133	20010927
GB 2381196	A	20030430	GB 2003-2473	20010927
EP 1322188	A1	20030702	EP 2001-970013	20010927
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509634	T	20040402	JP 2002-529895	20010927
NZ 523686	A	20041224	NZ 2001-523686	20010927
US 2003203963	A1	20031030	US 2003-396003	20030325

PRIORITY APPLN. INFO.:
GB 2000-23686 A 20000927
GB 2000-23687 A 20000927
WO 2001-GB4328 W 20010927

OTHER SOURCE(S): MARPAT 136:293912
GI



I

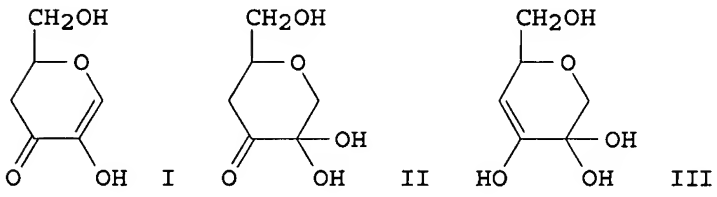
AB The present invention provides an antimicrobial composition, containing especially anhydrofructose derivs., for use against a microorganism such as Listeria, Salmonella, Bacillus, Saccharomyces, Pseudomonas, Clostridium, Lactobacillus, Brochothrix, Micrococcus, Yersinia, Enterobacter and Zygosaccharomyces, said composition comprising a cyclic compound (I, or a derivative

thereof, wherein R1 and R2 are independently selected from OH, O, and OR', wherein R' is H or COR'', and R'' is C1-10 alkyl; wherein R3 is a substituent comprising an OH group; wherein R4 and R5 are each independently selected from a hydrocarbyl group, H, OH or O, or represent a bond with an adjacent atom on the ring of the cyclic compound). The invention further relates to a process for preventing and/or inhibiting the growth of, and/or killing, microorganisms in a material, and the use of I.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:541238 CAPLUS
DOCUMENT NUMBER: 123:29155
TITLE: Ascopyrones P and T: two new compounds made during "active" ascomycete metabolism
AUTHOR(S): Baute, Marie-Antoinette; Deffieux, Gerard; Baute, Robert; Vercauteren, Joseph
CORPORATE SOURCE: Faculte Pharmacie, Universite Bordeaux II, Bordeaux, 33000, Fr.
SOURCE: Ars Pharmaceutica (1992), 33(1-4, Vol. 1), 440-6
CODEN: APHRAN; ISSN: 0004-2927
PUBLISHER: Universidad de Granada, Facultad de Farmacia
DOCUMENT TYPE: Journal
LANGUAGE: French
AB Several ascomycetes of the Pezizales and Tuberales orders express, after activating plasmolytic treatment, an enzyme activity that degrades α-D-1,4-glucans (glycogen, starch) to 1,5-D- anhydrofructose , then transforms this sugar to ascopyrone P (in Pezizales) and ascopyrone T (in Tuberales). The bioenergetic, mycol., and practical implications of these bioconversions are discussed.

L6 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:676374 CAPLUS
DOCUMENT NUMBER: 121:276374
TITLE: Fungal bioconversions yielding unusual pyrones from carbohydrates. XVII. Production of ascopyrones P and T by ascomycetes belonging to Pezizales and Tuberales
AUTHOR(S): Baute, M. -A.; Deffieux, G.; Vercauteren, J.; Baute, R.; Badoc, A.
CORPORATE SOURCE: Lab. de Mycol. et Biol. vegetale, Bordeaux, 33000, Fr.
SOURCE: Bulletin de la Societe de Pharmacie de Bordeaux (1993), 132(1-2-3-4), 29-39
CODEN: BSPBAD; ISSN: 0037-9093
DOCUMENT TYPE: Journal
LANGUAGE: French
GI



AB When subjected to activating plasmolytic treatments, several ascomycetes exhibit an enzymic activity that degrades α-D-1,4-glucans to 1,5-D-anhydrofructose, then converts this sugar to ascopyrone P (I) (in

Pezizales) or ascopyrone T tautomers (II and III) (in Tuberales). Biogenetical, mycol., and practical implications of these bioconversions are discussed.

L6 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:621283 CAPLUS
DOCUMENT NUMBER: 119:221283
TITLE: Enzymic activity degrading 1,4-α-D-glucans to ascopyrones P and T in Pezizales and Tuberales
AUTHOR(S): Baute, Marie Antoinette; Deffieux, Gerard; Vercauteren, Joseph; Baute, Robert; Badoc, Alain
CORPORATE SOURCE: Fac. Pharm., Univ. Bordeaux II, Bordeaux, 33000, Fr.
SOURCE: Phytochemistry (1993), 33(1), 41-5
CODEN: PYTCAS; ISSN: 0031-9422
DOCUMENT TYPE: Journal
LANGUAGE: English
AB When subjected to activating plasmolytic treatments, several Ascomycetes exhibit an enzymic activity which degrades 1,4-α-D-glucans to 1,5-D-anhydrofructose, then converts this sugar to ascopyrone P (in Pezizales) or ascopyrone T (in Tuberales). Biogenetic, mycol., and practical implications of these bioconversions are discussed.

L7 ANSWER 13 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:841811 CAPLUS
DOCUMENT NUMBER: 138:2160
TITLE: Ascopyrone P, a novel antibacterial derived from fungi
AUTHOR(S): Thomas, L. V.; Yu, S.; Ingram, R. E.; Refdahl, C.; Elsser, D.; Delves-Broughton, J.
CORPORATE SOURCE: Danisco Innovation, Beaminster, UK
SOURCE: Journal of Applied Microbiology (2002), 93(4), 697-705
CODEN: JAMIFK; ISSN: 1364-5072
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Aims: To assess the antimicrobial efficacy of ascopyrone P (APP), a secondary metabolite formed by the fungi Anthracobia melaloma, Plicaria anthracina, Plic. leiocarpa and Peziza petersi belonging to the order Pezizales. Methods and Results: In vitro testing using a well diffusion procedure showed that APP at a high concentration (approx. 5%) inhibited the growth of Gram-pos. and Gram-neg. bacteria. Using an automated microbiol. reader, growth curve anal. showed that 2000-4000 mg l-1 APP caused total or significant bacterial inhibition after incubation for 24 h at 30°C. Against certain yeast strains, 1000-2000 mg l-1 APP enhanced growth, although at higher concns. inhibition of some yeasts was observed Clostridium and fungal strains were not sensitive to 2000 mg l-1 APP. No significant cidal effect was observed after 2 h against Listeria monocytogenes or Escherichia coli. Results were identical whether the APP samples tested had been produced enzymically or chemical Conclusions: At a level of 2000 mg l-1, APP demonstrated growth inhibitory activity against a broad range of bacteria, but not yeasts or molds. Significance and Impact of the Study: A possible application for this novel natural antimicrobial is in food preservation, to control the growth of Gram-neg. and Gram-pos. bacteria in raw and cooked foods. Effective dosage levels would be 500-4000 mg kg-1, depending on food type. The efficacy, organoleptic and safety aspects of this compound in food still need to be assessed.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

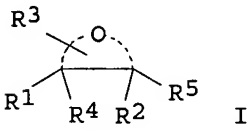
L7 ANSWER 14 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:688327 CAPLUS
DOCUMENT NUMBER: 133:268487
TITLE: An oxacyclic antioxidant, antibrowning agent, and emulsifier for food and plant materials
INVENTOR(S): Andersen, Soren Moller; Isak, Torben; Jensen, Henrik Max; Marcussen, Jan; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000056838	A1	20000928	WO 2000-IB358	20000316

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

CA 2362265	A1	20000928	CA 2000-2362265		20000316
BR 2000008689	A	20020108	BR 2000-8689		20000316
EP 1169409	A1	20020109	EP 2000-911165		20000316
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO					
JP 2002540248	T	20021126	JP 2000-606697		20000316
AU 769453	B2	20040129	AU 2000-33158		20000316
MX 2001PA09411	A	20020311	MX 2001-PA9411		20010918
US 2002051840	A1	20020502	US 2001-957715		20010918
US 6846505	B2	20050125			
PRIORITY APPLN. INFO.:			GB 1999-6457	A	19990319
			WO 2000-IB358	W	20000316

OTHER SOURCE(S): MARPAT 133:268487
GI



I

AB There is provided an anti-oxidant composition comprising a cyclic compound having formula (I) or a derivative thereof, wherein R1 and R2 are independently selected from -OH, =O, wherein R3 is a substituent comprising an -OH group; and wherein R4 and R5 are other than H; with the proviso that the compound is other than ascorbic acid.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 15 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:307464 CAPLUS
DOCUMENT NUMBER: 128:271612
TITLE: Analysis of Graded Flax Fiber and Yarn by Pyrolysis Mass Spectrometry and Pyrolysis Gas Chromatography Mass Spectrometry
AUTHOR(S): Morrison, W. H. III; Archibald, D. D.
CORPORATE SOURCE: R. B. Russell Agricultural Research Center, Athens, GA, 30604, USA
SOURCE: Journal of Agricultural and Food Chemistry (1998), 46(5), 1870-1876
CODEN: JAFCAU; ISSN: 0021-8561
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Pyrolysis mass spectrometry (PyMS) and pyrolysis gas chromatog. mass spectrometry (PyGCMS) were used to analyze samples of flax fiber and yarn which had been graded as being of high, medium, and low quality. In-source, low-voltage PyMS spectra were quite similar overall. To identify potential quality markers, we screened mass responses with thresholds for the following criteria: (1) intensity, (2) repeatability, and (3) correlation to quality level. Chemical interpretation of the selected masses suggests the samples may be differentiated based on the levels of pectin, fatty acids, protein, and phenolics. PyGCMS of the graded flax fiber and yarn provided addnl. information about the identity of some of the selected mass responses. More palmitic acid was detected in the low-quality fiber and yarn samples. Sinapylaldehyde and sinapyl alc. were present in higher concns. in the low-quality yarn as compared to the high-quality material. These data suggest that the amts. of cuticular material and waxes are inversely related to quality in both flax fiber and yarn and may be used as markers for certain aspects of flax product

quality.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 16 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:188653 CAPLUS
DOCUMENT NUMBER: 128:231754
TITLE: Monomeric products of catalytic thermolysis of cellulose and lignin
AUTHOR(S): Dobele, G.; Rossinskaya, G.; Domburg, G.
CORPORATE SOURCE: Lignin Chemistry Laboratory, State Institute of Wood Chemistry, Riga, LV-1006, Latvia
SOURCE: Biomass Gasification and Pyrolysis: State of the Art and Future Prospects, [Conference], Stuttgart, Apr. 9-11, 1997 (1997), 482-489. Editor(s): Kaltschmitt, Martin; Bridgwater, A. V. CPL Press: Newbury, UK. CODEN: 65UTAU
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The effect of H3PO4 upon the yield and composition of volatile products of pyrolysis, including those retaining the structure of a monomeric unit of wood polymers, are presented. Upon cellulose thermodestruction in the presence of 1-10% H3PO4, the yield of levoglucosan, the major product of cellulose depolymn., falls drastically. As a result of the development of low-temperature dehydration reactions under the action of the acid, depolymn. proceeds in partially or fully dehydrated regions of the cellulose chain. This is testified by the formation of levoglucosenone (16%), the major product of the acid catalyzed thermodestruction of cellulose, as well as other anhydro sugars. Upon lignin thermodestruction in the presence of H3PO4, dehydration reactions are not developed significantly, although the composition of the monomeric phenols fraction varies. An increase in the yield of phenol, guaiacol, or pyrocatechol is indicative of the catalysis of the cleavage of aryl-alkyl carbon and ether bonds, and demethoxylation.

L7 ANSWER 17 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1991:627503 CAPLUS
DOCUMENT NUMBER: 115:227503
TITLE: An analytical pyrolysis mass spectrometric study of Eucryphia cordifolia wood decayed by white-rot and brown-rot fungi
AUTHOR(S): Mulder, Marcel M.; Pureveen, Jos B. M.; Boon, Jaap J.; Martinez, Angel T.
CORPORATE SOURCE: Inst. At. Mol. Phys., FOM, Amsterdam, 1098 SJ, Neth.
SOURCE: Journal of Analytical and Applied Pyrolysis (1991), 19, 175-91
CODEN: JAAPDD; ISSN: 0165-2370
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The decay of E. cordifolia wood by white-rot and brown-rot fungi was studied with pyrolysis electron-impact mass spectrometry (Py(EI)MS) and pyrolysis ammonia chemical-ionization mass spectrometry (Py(CI)MS). Py(EI)MS spectra of the wood after decay by the white-rot fungus Ganoderma australe no longer show mass peaks indicative for lignin. The relative abundance of syringyl (dimethoxy) compds. decreases faster than the coniferyl (monomethoxy) compds. In the same spectra the relative abundance of hexosans increases whereas the relative amount of pentosans remains constant The presence of oligomeric sugars in the Py(CI)MS spectrum points to a preservation of some polysaccharides. Brown-rot fungal degradation of similar wood samples analyzed with Py(EI)MS reveals no mass peaks for polysaccharides, resulting in a spectrum with mass peaks specific for lignin. The Py(EI)MS, revealing lignin dimers, and the Py(CI)MS spectra suggest that the lignin was not modified by the brown-rot fungus. However, the pyrolysis gas chromatog.-mass spectrometry (PyGCMS) data show an increase in oxygenated lignin pyrolysis products suggesting a mol.

change in the lignin due to brown-rotting. In the brown-rotted wood one sugar pyrolysis product (levoglucosan) was observed by Py(CI)MS and PyGCMS suggesting that part of the cellulose polymer system is inaccessible to fungal degradation Comparison of data obtained from 13C cross-polarization/magic-angle-spinning NMR with data obtained from PyMS reveals that the latter method provides much more structural information.

L7 ANSWER 18 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1991:146704 CAPLUS
DOCUMENT NUMBER: 114:146704
TITLE: Molecular paleobotany of Nyssa endocarps
AUTHOR(S): Boon, J. J.; Stout, S. A.; Genuit, W.; Spackman, W.
CORPORATE SOURCE: FOM Inst. At. Mol. Phys., Amsterdam, 1098 SJ, Neth.
SOURCE: Acta Botanica Neerlandica (1989), 38(4), 391-404
CODEN: ABNRAN; ISSN: 0044-5983
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Fruit endocarps of 3 recent Nyssa species from southern Georgia and endocarps of 3 Nyssa species from the late-Oligocene Brandon lignite, VT. are characterized and compared using pyrolysis gas chromatog.-mass spectrometry (PY-GC-MS), pyrolysis-mass spectrometry (PY-MS and desorption chemical ionization mass spectrometry (DCI-MS), and microscopic techniques. PY-GC-MS and PY-MS demonstrated that during the lignitization almost all of the carbohydrate is removed from the endocarp fiber walls. Some hexose oligomer residues do survive lignitization as levoglucosan was observed in the PY-GC-MS trace of the lignitic endocarp N. fissilis and mass peaks indicative for anhydrohexose oligomers were observed in DCI-MS spectra of N. fissilis and N. brandoniana. The PY-GC-MS data on the mixed guaiacyl-syringyl lignin in the recent and fossil endocarp wall have very similar pyrolysis product distributions. The abundance of phenolic pyrolysis products with aliphatic side chains suggest a different less oxygenated lignin in the endocarps than in the Nyssa xylem cell walls. In spite of the significant chemical changes, which occur during the early coalification, considerable microscopic detail can be preserved. Some fiber cell walls even retained an anisotropic character, which may be caused by preserved crystalline cellulose. The effect of storage conditions on the chemical of the paleobotanical samples was investigated by PY-MS and multivariate anal. Fossil endocarps stored in glycerin/EtOH experienced some extraction of a soluble lignin-derived fraction, but water-stored endocarps did not. The residues of water glycerol/EtOH stored samples have similar polyphenolic polymers.

L7 ANSWER 19 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:105341 CAPLUS
DOCUMENT NUMBER: 106:105341
TITLE: Molecular characterization of the pyrolysis of biomass
AUTHOR(S): Evans, Robert J.; Milne, Thomas A.
CORPORATE SOURCE: Sol. Energy Res. Inst., Golden, CO, 80401, USA
SOURCE: Energy & Fuels (1987), 1(2), 123-37
CODEN: ENFUEM; ISSN: 0887-0624
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The technique of mol.-beam, mass spectrometric sampling is applied to the elucidation of the mol. pathways in the fast pyrolysis of wood and its principal isolated constituents. The goal is the optimization of high-value fuel products by thermal and catalytic means. The pos.-ion mass spectra shown are obtained from real-time, direct sampling of light gases, reactive intermediates, and condensible vapors simultaneously. The cellulose [9004-34-6], lignin [9005-53-2], and hemicellulose [9034-32-6] (e.g., xylan [9014-63-5]) components of wood pyrolyze largely to monomer and monomer-related fragments and give characteristic mass spectral signatures. Whole wood appears to behave as the sum of its constituents, with few if any vapor species derived from interaction of

the main polymer constituents. An important interaction, however, is the influence of mineral matter in the wood on the carbohydrate pyrolysis pathways. Vapor phase cracking of the primary products proceeds through a stage of light hydrocarbons and oxygenates to the ultimate formation of aromatic tars and H, CO, CO2, and water. These steps are illustrated and discussed. Consistent with these observations, a relatively simple pyrolysis reaction scheme is proposed.

L7 ANSWER 20 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:105152 CAPLUS
DOCUMENT NUMBER: 106:105152
TITLE: Characterization of a peat bog profile by Curie point pyrolysis-mass spectrometry combined with multivariant analysis and by pyrolysis gas chromatography-mass spectrometry
AUTHOR(S): Boon, Jaap Jan; Dupont, Lydie Madeleine; De Leeuw, Jan Willem
CORPORATE SOURCE: FOM Inst. At. Mol. Phys., Amsterdam, 1098 SJ, Neth.
SOURCE: Peat Water (1986), 215-39. Editor(s): Fuchsman, Charles H. Elsevier Appl. Sci.: London, UK.
CODEN: 55JGAR
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The instrumental methods, named in the title, provided identification of several compds. present in peat from the Meerstalblok bog in Holland. These compds. together with the paleofloristic anal. showed that the humification of ericaceous plants from which the peat was formed proceeded much faster in the lower part of the deposit than in the upper part. This was due to an abrupt climate change from humid to dry. The methods used in this investigation and interpretation of mass spectra are described.

L7 ANSWER 21 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1985:563953 CAPLUS
DOCUMENT NUMBER: 103:163953
TITLE: Pyrolysis-gas chromatography-mass spectrometry of soil polysaccharides, soil fulvic acids and polymaleic acid
AUTHOR(S): Saiz-Jimenez, C.; De Leeuw, J. W.
CORPORATE SOURCE: Cent. Edafol., CSIC, Sevilla, Spain
SOURCE: Organic Geochemistry (1984), 6(Adv. Org. Geochem. 1983), 287-93
CODEN: ORGEDE; ISSN: 0146-6380
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cryogenic Curie-point pyrolysis-gas chromatog.-mass spectrometry was applied to investigate the chemical composition of organic matter in soils. Two soil fulvic acid fractions, a so-called soil polysaccharide fraction, and polymaleic acid were analyzed. The soil polysaccharide fraction contains almost exclusively polysaccharides with major building blocks glucose, mannose, and galactose. The soil fulvic acid fractions contain varying amts. of polysaccharides, lignins, and lipids. Polymaleic acid structures were virtually absent in the podzol fulvic acid and absent in other soil organic matter fractions, indicating that these structures, previously suggested to be present in soil fulvic acids, do not play an important role.

L7 ANSWER 22 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:425420 CAPLUS
DOCUMENT NUMBER: 95:25420
TITLE: The crystal structure of 1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose
AUTHOR(S): Stevenson, Thomas T.; Stenkamp, Ronald E.; Jensen, Lyle H.; Cochran, Todd G.; Shafizadeh, Fred; Furneaux, Richard H.

CORPORATE SOURCE: Dep. Bot., Univ. Washington, Seattle, WA, 98195, USA
SOURCE: Carbohydrate Research (1981), 90(2), 319-25
CODEN: CRBRAT; ISSN: 0008-6215
DOCUMENT TYPE: Journal
LANGUAGE: English
AB On the basis of the crystal structure studies the title ulose, in the crystalline state, adopts a sofa5 conformation that is strongly distorted towards the 4H5 conformation.

L7 ANSWER 23 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1979:39137 CAPLUS
DOCUMENT NUMBER: 90:39137
TITLE: 1,5-Anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose and other pyrolysis products of cellulose
AUTHOR(S): Shafizadeh, Fred; Furneaux, Richard H.; Stevenson, Thomas T.; Cochran, Todd G.
CORPORATE SOURCE: Dep. Chem., Univ. Montana, Missoula, MT, USA
SOURCE: Carbohydrate Research (1978), 67(2), 433-47
CODEN: CRBRAT; ISSN: 0008-6215
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Uncatalyzed pyrolysis of cellulose provides a tar containing mainly 1,6-anhydro-D-glucose derivs. and some unsatd. products. The latter include a new enone that has been isolated by preparative, column chromatog. in 1.4% yield and identified as 1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose. This compound is also formed by pyrolysis of other carbohydrate polymers. A mechanism for its production from internal units has been deduced from the exptl. data. The pyrolysis products of cellulose also contain 3,5-dihydroxy-2-methyl-4H-pyran-4-one, which appears to be an oxidant product.

L7 ANSWER 1 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:639823 CAPLUS
DOCUMENT NUMBER: 147:2019
TITLE: Immunosuppressive agent and antiallergic agent containing ascopyrone
INVENTOR(S): Abeyama, Kazuhiro; Yoshimoto, Yasushi
PATENT ASSIGNEE(S): Nihon Denpun Kogyo K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007145772	A	20070614	JP 2005-344158	20051129

PRIORITY APPLN. INFO.: JP 2005-344158 20051129

AB The invention relates to an immunosuppressive agent and antiallergic agent characterized by containing ascopyrone, especially ascopyrone P. A use of ascopyrone for preparation of drugs or functional foods is also disclosed. Thus, ascopyrone P inhibited oxazolone-induced type IV allergic reaction in mice, T cell proliferation in vitro, and inflammatory cytokine production in vitro.

L7 ANSWER 2 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1174220 CAPLUS
DOCUMENT NUMBER: 145:465709
TITLE: Ascopyrone derivatives as anti-inflammatory drugs
INVENTOR(S): Abeyama, Kazuhiro; Maruyama, Ikuo; Yoshimoto, Yasushi
PATENT ASSIGNEE(S): Nippon Denpun Kogyo Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006306810	A	20061109	JP 2005-133080	20050428

PRIORITY APPLN. INFO.: JP 2005-133080 20050428

AB Ascopyrone derivs., including ascopyrone P, are claimed as anti-inflammatory drugs. The antiinflammatory effects of ascopyrone P were tested in mice.

L7 ANSWER 3 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:548985 CAPLUS
DOCUMENT NUMBER: 145:211227
TITLE: A new chemical synthesis of Ascopyrone P from 1,5-anhydro-D-fructose
AUTHOR(S): Andreassen, Mikkel; Lundt, Inge
CORPORATE SOURCE: Department of Chemistry, Technical University of Denmark, Kgs. Lyngby, DK-2800, Den.
SOURCE: Carbohydrate Research (2006), 341(10), 1692-1696
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 145:211227

AB The naturally occurring antioxidant Ascopyrone P (1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose) was prepared from the rare sugar 1,5-anhydro-D-fructose (I) in three steps in an overall yield of 36%.

Thus, acetylation of I afforded the enolone 3,6-di-O-acetyl-1,5-anhydro-4-deoxy-D-glycero-hex-3-en-2-ulopyranose, which could be isomerized to 2,6-di-O-acetyl-1,5-anhydro-4-deoxy-D-glycero-hex-1-ene-3-ulose (II). Deacetylation of II under mild conditions gave crystalline Ascopyrone P.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 4 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:165247 CAPLUS
DOCUMENT NUMBER: 144:386056
TITLE: Catabolism of 1,5-anhydro-D-fructose in Sinorhizobium morelense S-30.7.5: discovery, characterization, and overexpression of a new 1,5-anhydro-D-fructose reductase and its application in sugar analysis and rare sugar synthesis
AUTHOR(S): Kuehn, Annette; Yu, Shukun; Giffhorn, Friedrich
CORPORATE SOURCE: Lehrstuhl fuer Angewandte Mikrobiologie, Universitaet des Saarlandes, Saarbruecken, 66123, Germany
SOURCE: Applied and Environmental Microbiology (2006), 72(2), 1248-1257
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The bacterium Sinorhizobium morelense S-30.7.5 was isolated by a microbial screening using the sugar 1,5-anhydro-D-fructose (AF) as the sole carbon source. This strain metabolized AF by a novel pathway involving its reduction to 1,5-anhydro-D-mannitol (AM) and the further conversion of AM to D-mannose by C-1 oxygenation. Growth studies showed that the AF metabolizing capability is not confined to S. morelense S-30.7.5 but is a more common feature among the Rhizobiaceae. The AF reducing enzyme was purified and characterized as a new NADPH-dependent monomeric reductase (AFR, E.C. 1.1.1.-) of 35.1 kDa. It catalyzed the stereoselective reduction of AF to AM and also the conversion of a number of 2-keto aldoses (osones) to the corresponding manno-configurated aldoses. In contrast, common aldoses and ketoses, as well as nonsugar aldehydes and ketones, were not reduced. A database search using the N-terminal AFR sequence retrieved a putative 35-kDa oxidoreductase encoded by the open reading frame Smc04400 localized on the chromosome of Sinorhizobium meliloti 1021. Based on sequence information for this locus, the afr gene was cloned from S. morelense S-30.7.5 and overexpressed in Escherichia coli. In addition to the oxidoreductase of S. meliloti 1021, AFR showed high sequence similarities to putative oxidoreductases of Mesorhizobium loti, Brucella suis, and B. melitensis but not to any oxidoreductase with known functions. AFR could be assigned to the GFO/IDH/MocA family on the basis of highly conserved common structural features. His6-tagged AFR was used to demonstrate the utility of this enzyme for AF anal. and synthesis of AM, as well as related derivs.

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 5 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:990082 CAPLUS
DOCUMENT NUMBER: 143:365867
TITLE: Conversion from 1,5-anhydro-D-fructose into functional compound, ascopyrone P by heating
AUTHOR(S): Yoshinaga, Kazuhiro; Wakamatsu, Chinami; Saeki, Yuzo; Abe, Jun-ichi; Hizukuri, Susum
CORPORATE SOURCE: Nihondenpun Kogyo Co., Kagoshima, 891-0196, Japan
SOURCE: Journal of Applied Glycoscience (2005), 52(3), 287-291
CODEN: JAGLFX; ISSN: 1344-7882
PUBLISHER: Japanese Society of Applied Glycoscience
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Radical scavenger activity of the heated, aqueous solution of 1,5-anhydro-D-fructose was higher than that of non-heated one. The reason was ascopyrone P, which had 500-fold stronger radical-scavenger activity than 1,5-anhydro-D-fructose, was derive from heat treatment. Gradual conversion of 1,5-anhydro-D-fructose into ascopyrone P seemed one of the key for the long-lasting, antioxidative action of 1,5-anhydro-D-fructose preparation Efficient production of ascopyrone P was achieved by heat treatment, namely, 50% of 1,5-anhydro-D-fructose was converted by the reaction at 155° for 5 min. In foods, ascopyrone P was produced by retort cooking of the materials containing 1,5-anhydro-D-fructose, such as truffle and red seaweed Gracilaria verrucosa. Alternatively, the derivative (approx. 20 μg) was synthesized on baking or frying of foods (1 g) containing glucans, starch or cellulose.

L7 ANSWER 6 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:444007 CAPLUS
DOCUMENT NUMBER: 141:394320
TITLE: Investigation of the effectiveness of Ascopyrone P as a food preservative
AUTHOR(S): Thomas, Linda V.; Ingram, Richard E.; Yu, Shukun; Delves-Broughton, Joss
CORPORATE SOURCE: Innovation Department, Danisco, Dorset, DT8 3DZ, UK
SOURCE: International Journal of Food Microbiology (2004), 93(3), 319-323
CODEN: IJFMDD; ISSN: 0168-1605
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Ascopyrone P (APP), a novel antibacterial from fungi, was evaluated as a food preservative. Efficacy was generally assessed by comparing the time taken for test strains to grow to 106 CFU/g in food ±APP. In chilled chicken soup, 2000 mg kg-1 APP prevented Bacillus cereus, Listeria monocytogenes, Pseudomonas fluorescens, Salmonella and Escherichia coli reaching this threshold for >60 days. Good activity was also observed at 500-1000 mg kg-1 but not against L. monocytogenes. No activity was observed against Saccharomyces cerevisiae. Activity was reduced at 20 °C, although 2000 mg kg-1 was still effective against B. cereus and P. fluorescens. APP was less effective in chilled cooked meat systems and ineffective in raw meat. In a cooked meat system at 8 °C, bacteriostatic effect was generally observed at 2000 mg kg-1 against Salmonella typhimurium, E. coli and P. fluorescens but not against L. monocytogenes or Lactobacillus sake. Activity against Gram-neg. enteric bacteria was enhanced by low temperature. In milk, 2000 mg l-1 was effective against P. fluorescens at chilled but not ambient temperature APP was ineffective against yeasts and the mold Byssochlamys in apple juice. A min. of 2000 mg kg-1 APP would appear to be necessary for antibacterial efficacy in food, although low-temperature storage may help. Observed variations in sensitivity may be related to APP stability, which decreases >pH 5.5. Toxicol. testing is needed before consideration of APP for food use.
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 7 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:392605 CAPLUS
DOCUMENT NUMBER: 140:401364
TITLE: Polynucleotide encoding a pyranosone dehydratase from Phanerochaete chrysosporium and methods to produce fungal resistant transgenic plants
INVENTOR(S): Yu, Shukun; Hansen, Egon Bech; Pedersen, Hans Christian; Turner, Mark; Weiergang, Inge
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 220 pp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004039993	A1	20040513	WO 2003-GB4594	20031024
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
WO 2003037918	A2	20030508	WO 2002-GB4916	20021030
WO 2003037918	A3	20031016		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003220394	A1	20031127	US 2002-283940	20021030
AU 2003274375	A1	20040525	AU 2003-274375	20031024
US 2005164259	A1	20050728	US 2004-22454	20041222

PRIORITY APPLN. INFO.:

US 2002-283940	A	20021030
WO 2002-GB4916	A	20021030
GB 2002-26159	A	20021108
GB 2003-10479	A	20030507
US 2003-468954P	P	20030507
GB 2001-26164	A	20011031
US 2001-343485P	P	20011221
WO 2003-GB4594	W	20031024

AB The present invention relates to a polynucleotide sequence encoding a pyranosone dehydratase and methods to produce fungal resistant transgenic plants. Specifically, the invention relates to a method for producing transgenic plants which are resistant to pathogens, particularly fungal pathogens, comprising transforming the plants or part thereof with at least a polynucleotide sequence encoding a pyranosone dehydratase. Further aspects relate to transgenic plants comprising at least a heterologous polynucleotide sequence encoding pyranosone dehydratase, which plants are resistant to pathogens, particularly fungal pathogens. The present invention further relates to the in situ production of one or more antimicrobial compds., such as microthecin, cortalcerone and/or ascopyrone P (APP) in a host organism, such as a plant.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 8 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:392475 CAPLUS
DOCUMENT NUMBER: 140:403279
TITLE: Antimicrobial material
INVENTOR(S): Yu, Shukun; Buchter-Larsen, Aksel; Morgan, Andrew; Turner, Mark; Pedersen, Hans Christian; Weiergang, Inge; Bech-Hansen, Egon

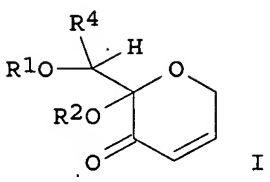
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 109 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004039820	A1	20040513	WO 2003-GB4603	20031024
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
WO 2003037918	A2	20030508	WO 2002-GB4916	20021030
WO 2003037918	A3	20031016		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003220394	A1	20031127	US 2002-283940	20021030
AU 2003278334	A1	20040525	AU 2003-278334	20031024
US 2005164259	A1	20050728	US 2004-22454	20041222

PRIORITY APPLN. INFO.:

US 2002-283940	A	20021030
WO 2002-GB4916	A	20021030
GB 2002-26159	A	20021108
GB 2003-6312	A	20030319
GB 2003-6315	A	20030319
GB 2003-10479	A	20030507
GB 2003-10480	A	20030507
US 2003-468954P	P	20030507
GB 2001-26164	A	20011031
US 2001-343485P	P	20011221
WO 2003-GB4603	W	20031024

OTHER SOURCE(S): MARPAT 140:403279
GI



I

AB The present invention provides an antimicrobial material comprising (i) an antimicrobial compound in a stabilized form (a 'stabilized compound'), or (ii)

(a) a first conversion agent capable of converting a precursor of an antimicrobial compound (a 'primary precursor') to the antimicrobial compound; and (b) (I) a primary precursor, or (II) a second conversion agent capable of converting a precursor of the primary antimicrobial precursor (a 'secondary precursor') to the primary precursor; and a secondary precursor; wherein the antimicrobial compound is selected from microthecin and derivs. thereof, such as compds. having formula (I), wherein R1 and R2 are independently selected from H and C(=O)R3 wherein R3 is an alkyl group and R4 is H or OH.

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 9 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:356619 CAPLUS
DOCUMENT NUMBER: 138:367669
TITLE: Enzymic preparation of ascopyrone P from starch
INVENTOR(S): Morgan, Andrew John; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003038107	A2	20030508	WO 2002-GB4895	20021030
WO 2003038107	A3	20041028		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003232417	A1	20031218	US 2002-283963	20021030

PRIORITY APPLN. INFO.:		
GB 2001-26162	A	20011031
US 2001-343316P	P	20011221
US 2001-343313P	P	20011221
US 2001-343368P	P	20011221
US 2001-343447P	P	20011221
US 2001-343485P	P	20011221

AB The present invention relates to a process for preparing ascopyrone P, or a derivative thereof, said process comprising the steps of: (I) converting a starch-type substrate to 1,5-anhydro-D-fructose with α-1,4-glucan lyase at a pH of from about 3.8 to 7.0; (II) treating said 1,5-anhydro-D-fructose with 1,5-anhydro-δ-fructose dehydratase and/or pyranosone dehydratase and optionally ascopyrone P synthase at a pH of from about 5.0 to about 7.5.

L7 ANSWER 10 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:356600 CAPLUS
DOCUMENT NUMBER: 138:364737
TITLE: Purification and characterization of ascopyrone P synthase from Anthracobia melaloma and its use for preparation of ascopyrone P
INVENTOR(S): Morgan, Andrew John; Refdahl, Charlotte; Yu, Shukun
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 86 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003038084	A1	20030508	WO 2002-GB4885	20021030
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003170832	A1	20030911	US 2002-283988	20021030
US 2003232417	A1	20031218	US 2002-283963	20021030
PRIORITY APPLN. INFO.:			GB 2001-26163 A	20011031
			US 2001-343313P P	20011221
			GB 2001-26162 A	20011031
			US 2001-343316P P	20011221
			US 2001-343368P P	20011221
			US 2001-343447P P	20011221
			US 2001-343485P P	20011221

OTHER SOURCE(S): MARPAT 138:364737

AB The present invention relates to the purification and characterization of ascopyrone P synthase from Anthracobia melaloma. Ascopyrone P synthase 1 (APS1) was purified by a simple and efficient purification procedure from A. melaloma. A purification of 408 fold was achieved. APS1 was apparently a homodimer as a mol. mass of 60 kDa was observed in SDS-gel electrophoresis using gels with 8-25% gradient and 124 kDa on gel filtration chromatog. by a Superdex-200 column. APS1 had an optimal pH-range of 5.0 to pH 6.0 with the optimal activity at pH 5.5. APS1 had a wide temperature optimum range from 25° to 50° with an optimum temperature at 48°. Several isoforms of ascopyrone P synthase were present in the cell-free extract Ascopyrone P synthase was resolved in two isoforms (APS1 and APS2) in the hydrophobic interaction chromatog. step and addnl. APS1 into 3 isoforms in the ion-exchange chromatog. step. APS2 was purified and showed the same mol. mass of 60 kDa as APS1 on SDS-PAGE. A process for preparing ascopyrone P using α-1,4-glucan lyase, 1,5-anhydro-D-fructose dehydratase, and the ascopyrone P synthase of the invention with a starch-type substrate (glycogen or maltodextrin) is disclosed.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 11 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:356469 CAPLUS
DOCUMENT NUMBER: 138:381343
TITLE: Purification, cloning and sequencing of pyranosone dehydratase from Phanerochaete chrysosporium and its use for production of microthecin, cortalcerone and ascopyrone P
INVENTOR(S): Morgan, Andrew John; Yu, Shukun; Weiergang, Inge; Pedersen, Hans Christian
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 96 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2003037918	A2	20030508	WO 2002-GB4916		20021030
WO 2003037918	A3	20031016			
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
CA 2464940	A1	20030508	CA 2002-2464940		20021030
US 2003232417	A1	20031218	US 2002-283963		20021030
EP 1440150	A2	20040728	EP 2002-772583		20021030
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JP 2005509415	T	20050414	JP 2003-540199		20021030
CN 1802433	A	20060712	CN 2002-826518		20021030
WO 2004039993	A1	20040513	WO 2003-GB4594		20031024
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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
WO 2004039820	A1	20040513	WO 2003-GB4603		20031024
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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
AU 2003274375	A1	20040525	AU 2003-274375		20031024
AU 2003278334	A1	20040525	AU 2003-278334		20031024
US 2005164259	A1	20050728	US 2004-22454		20041222
PRIORITY APPLN. INFO.:			GB 2001-26164	A	20011031
			US 2001-343485P	P	20011221
			GB 2001-26162	A	20011031
			US 2001-343313P	P	20011221
			US 2001-343316P	P	20011221
			US 2001-343368P	P	20011221
			US 2001-343447P	P	20011221
			US 2002-283940	A	20021030
			WO 2002-GB4916	W	20021030
			GB 2002-26159	A	20021108
			GB 2003-6312	A	20030319
			GB 2003-6315	A	20030319
			GB 2003-10479	A	20030507
			GB 2003-10480	A	20030507
			US 2003-468954P	P	20030507
			WO 2003-GB4594	W	20031024
			WO 2003-GB4603	W	20031024

AB The present invention discloses sequence information relating to pyranosone dehydratase (PD). A purified heat-stable PD was obtained from the fungus Phanerochaete chrysosporium. Studies have shown that this purified PD not only uses 1,5-anhydro-D-fructose (AF) as substrate, but uses it more efficiently than its natural substrate, glucosone. Furthermore, the product was shown to be microthecin, an agrochem. antifungal useful in plant protection. The nucleotide sequence of the gene coding for PD from P. chrysosporium is disclosed. The DNA sequence theor. could code for three proteins with different amino acid sequences. The N-terminal sequence of PD, and the endo-N-terminal sequences of PD after hydrolysis with two proteinases were elucidated. Together these account for 332 amino acids or 37% of the full length of the PD protein. The invention further relates to the use of pyranosone dehydratase in the conversion of AF to ascopyrone P and microthecin and the conversion of glucosone to cortalcerone.

L7 ANSWER 12 OF 23 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:4293 CAPLUS
DOCUMENT NUMBER: 138:338350
TITLE: Ascopyrone P: chemical synthesis from D-glucose
AUTHOR(S): Andersen, S. M.; Jensen, H. M.; Yu, S.
CORPORATE SOURCE: Department of Chemistry, University of Alberta, Edmonton, AB, T6E 2G2, Can.
SOURCE: Journal of Carbohydrate Chemistry (2002), 21(6), 569-578
CODEN: JCACDM; ISSN: 0732-8303
PUBLISHER: Marcel Dekker, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 138:338350
AB The pyranone, 1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose (ascopyrone P), has been synthesized in eight steps from D-glucose. The key steps were deacetylation of 3,6-di-O-acetyl-1,5-anhydro-D-glycero-hex-3-en-2-ulose to give isomers and hydrates of 1,5-anhydro-4-deoxy-D-glycero-hex-3-en-2-ulose. Isomerization of this mixture afforded 1,5-anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose (ascopyrone P) in a moderate yield.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:736842 CAPLUS
TITLE: Enzymatic conversion of starch to valuable antioxidants, antimicrobials and fine chemicals
AUTHOR(S): Yu, Shukun
CORPORATE SOURCE: Danisco Innovation Copenhagen, Danisco A/S, Copenhagen, DK1001, Den.
SOURCE: Abstracts of Papers, 230th ACS National Meeting, Washington, DC, United States, Aug. 28-Sept. 1, 2005 (2005), CARB-025. American Chemical Society: Washington, D. C.
CODEN: 69HFCL
DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)
LANGUAGE: English
AB We at Danisco A/S (Copenhagen, Denmark) have revealed a new starch and glycogen degrading pathway in fungi and algae by the discovering of several new enzymes and metabolites. These new enzymes include glucan lyases, dehydratases and tautomerases, which proved to be useful in the bio-conversion of starch. The products from this pathway (anhydrofructose, ascopyrone P, microthecin and their derivs.) proved to be useful as antioxidants and antimicrobials for various applications. We named this pathway as the anhydrofructose pathway of starch and glycogen degradation. This technol. is referred to as the anhydrofructose technology (Zuckerindustrie, 129 (2004): 26-30). ----------.

L9 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:465228 CAPLUS
DOCUMENT NUMBER: 143:148764
TITLE: Enzymatic description of the anhydrofructose pathway of glycogen degradation
AUTHOR(S): Yu, Shukun
CORPORATE SOURCE: Danisco Innovation, Danisco A/S, Copenhagen, DK 1001, Den.
SOURCE: Biochimica et Biophysica Acta, General Subjects (2005), 1723(1-3), 63-73
CODEN: BBGSB3; ISSN: 0304-4165
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The anhydrofructose pathway describes the degradation of glycogen and starch to metabolites via 1,5-anhydro-D-fructose (1,5AnFru). Enzymes that form 1,5AnFru, ascopyrone P (APP), and ascopyrone M (APM) have been reported from our laboratory earlier. In the present study, APM formed from 1,5AnFru was found to be the intermediate to the antimicrobial microthecin. The microthecin forming enzyme from the fungus Phanerochaete chrysosporium proved to be aldos-2-ulose dehydratase (AUDH, E.C. 4.2.1.-), which was purified and characterized for its enzymic and catalytic properties. The purified AUDH showing a mol. mass of 97.4 kDa on SDS-PAGE was partially sequenced. Total 332 amino acid residues in length were obtained, representing some 37% of the AUDH protein. The obtained amino acid sequences showed no homol. to known proteins but to an unannotated DNA sequence in Scaffold 62 of the published genome of the fungus. The alignment revealed three introns of the identified AUDH gene (Audh; ph.chr), thus the first gene coding for a neutral sugar dehydratase is identified. AUDH was found to be a bi-functional enzyme, being able to dehydrate 1,5AnFru to APM and further isomerizing the APM formed to microthecin. The optimal pH for the formation of APM and microthecin was pH 5.8 and 6.8, resp. AUDH showed 5-fold higher activity toward 1,5AnFru than toward its analog glucosone, when tested at concns. from 0.6 mM to 0.2 M. Based on the characteristic UV absorbance of microthecin (230 nm) and APM (262 nm) assay methods were developed for the microthecin forming enzymes.

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:343479 CAPLUS
DOCUMENT NUMBER: 141:119891
TITLE: Enzymatic description of the anhydrofructose pathway of glycogen degradation I. Identification and purification of anhydrofructose dehydratase, ascopyrone tautomerase and α-1,4-glucan lyase in the fungus Anthracobia melaloma
AUTHOR(S): Yu, Shukun; Refdahl, Charlotte; Lundt, Inge
CORPORATE SOURCE: Danisco Innovation, Danisco A/S, Copenhagen, DK-1001, Den.
SOURCE: Biochimica et Biophysica Acta, General Subjects (2004), 1672(2), 120-129
CODEN: BBGSB3; ISSN: 0304-4165
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The anhydrofructose pathway describes the degradation of glycogen and starch to metabolites via 1,5-anhydro-d-fructose (1,5AnFru). The enzyme catalyzing the first reaction step of this pathway, i.e., α-1,4-glucan lyase (E.C. 4.2.1.13), has been purified, cloned and characterized from fungi and red algae in our laboratory earlier. In the present study, two 1,5AnFru metabolizing enzymes were discovered in the fungus Anthracobia melaloma for the formation of ascopyrone P (APP), a fungal secondary metabolite exhibiting antibacterial and antioxidant activity. These are 1,5AnFru dehydratase (AFDH) and ascopyrone tautomerase (APTM). AFDH catalyzed the conversion of 1,5AnFru to ascopyrone M (APM), a compound that has been earlier presumed to occur biol., while APTM isomerized the APM formed to APP. Both enzymes were purified 400-fold by (NH4)2SO4 fractionation, hydrophobic interaction, ion-exchange and gel filtration chromatog. The purified AFDH showed a mol. mass of 98 kDa on SDS-PAGE and 230 kDa by gel filtration. The corresponding values for APTM was 60 and 140 kDa. Spectrophotometric and HPLC methods were developed for the assay of these two enzymes. To confirm that A. melaloma possessed all enzymes needed for conversion of glycogen to APP, an α-1,4-glucan lyase from this fungus was isolated and partially sequenced. Based on this work, a scheme of the enzymic description of the anhydrofructose pathway in A. melaloma was proposed.
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 4 OF 6 MEDLINE on STN
ACCESSION NUMBER: 2005678281 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16302767
TITLE: Examination of 1,5-anhydro-D-fructose and the enolone ascopyrone P, metabolites of the anhydrofructose pathway of glycogen and starch degradation, for their possible application in fruits, vegetables, and beverages as antibrowning agents.
AUTHOR: Yuan Yongbing; Mo Shuxia; Cao Rong; Westh Birgitte Claudi; Yu Shukun
CORPORATE SOURCE: Agricultural Produce Quality and Safety Laboratory, Laiyang Agricultural University, 266109 Qingdao, China.
SOURCE: Journal of agricultural and food chemistry, (2005 Nov 30) Vol. 53, No. 24, pp. 9491-7.
Journal code: 0374755. ISSN: 0021-8561.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 200602
ENTRY DATE: Entered STN: 22 Dec 2005
Last Updated on STN: 3 Feb 2006
Entered Medline: 3 Feb 2006

AB The anhydrofructose pathway describes the degradation of glycogen and starch to 1,5-anhydro-D-fructose (1,5AnFru) and its further conversion to the enolone ascopyrone P (APP) via the transit intermediate ascopyrone M. The two products, 1,5AnFru and APP, were examined in this study for their effects in controlling the browning of selected fruits, vegetables, and beverages. The results showed that 1,5AnFru had an antibrowning effect in green tea and was able to slow turbidity development in black currant wine. APP proved to be an antibrowning agent comparable to kojic acid. It showed an antibrowning effect in a range of agricultural products, such as various cultivars of apple, pear, potato, lettuce, and varieties of green tea in an efficacy concentration range from 300 to 500 ppm. Mechanism studies indicated that, like kojic acid, APP showed inhibition toward plant polyphenol oxidase and was able to decolor quinones.

L9 ANSWER 5 OF 6 MEDLINE on STN
ACCESSION NUMBER: 2005278442 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15716041
TITLE: Enzymatic description of the anhydrofructose pathway of glycogen degradation II. Gene identification and characterization of the reactions catalyzed by aldos-2-ulose dehydratase that converts 1,5-anhydro-D-fructose to microthecin with ascopyrone M as the intermediate.
AUTHOR: Yu Shukun
CORPORATE SOURCE: Danisco Innovation, Danisco A/S, Langebrogade 1, PO box 17, DK 1001, Copenhagen K, Denmark.. g7SY@Danisco.com
SOURCE: Biochimica et biophysica acta, (2005 May 25) Vol. 1723, No. 1-3, pp. 63-73. Electronic Publication: 2005-01-25. Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200507
ENTRY DATE: Entered STN: 1 Jun 2005
Last Updated on STN: 13 Jul 2005
Entered Medline: 12 Jul 2005

AB The anhydrofructose pathway describes the degradation of glycogen and starch to metabolites via 1,5-anhydro-D-fructose (1,5AnFru). Enzymes that form 1,5AnFru, ascopyrone P (APP), and ascopyrone M (APM) have been reported from our laboratory earlier. In the present study, APM formed from 1,5AnFru was found to be the intermediate to the antimicrobial microthecin. The microthecin forming enzyme from the fungus Phanerochaete chrysosporium proved to be aldos-2-ulose dehydratase (AUDH, EC 4.2.1.-), which was purified and characterized for its enzymatic and catalytic properties. The purified AUDH showing a molecular mass of 97.4 kDa on SDS-PAGE was partially sequenced. Total 332 amino acid residues in length were obtained, representing some 37% of the AUDH protein. The obtained amino acid sequences showed no homology to known proteins but to an unannotated DNA sequence in Scaffold 62 of the published genome of the fungus. The alignment revealed three introns of the identified AUDH gene (Audh; ph.chr), thus the first gene coding for a neutral sugar dehydratase is identified. AUDH was found to be a bi-functional enzyme, being able to dehydrate 1,5AnFru to APM and further isomerizing the APM formed to microthecin. The optimal pH for the formation of APM and microthecin was pH 5.8 and 6.8, respectively. AUDH showed 5 fold higher activity toward 1,5AnFru than toward its analogue

glucosone, when tested at concentrations from 0.6 mM to 0.2 M. Based on the characteristic UV absorbance of microthecin (230 nm) and APM (262 nm) assay methods were developed for the microthecin forming enzymes.

L9 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 2004212115 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15110094
TITLE: Enzymatic description of the anhydrofructose pathway of glycogen degradation; I. Identification and purification of anhydrofructose dehydratase, ascopyrone tautomerase and alpha-1,4-glucan lyase in the fungus Anthracobia melaloma.
AUTHOR: Yu Shukun; Refdahl Charlotte; Lundt Inge
CORPORATE SOURCE: Danisco Innovation, Danisco A/S, Langebrogade 1, P.O. Box 17, DK 1001 Copenhagen, Denmark.. g7SY@Danisco.com
SOURCE: Biochimica et biophysica acta, (2004 May 3) Vol. 1672, No. 2, pp. 120-9.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200406
ENTRY DATE: Entered STN: 28 Apr 2004
Last Updated on STN: 8 Jun 2004
Entered Medline: 7 Jun 2004

AB The anhydrofructose pathway describes the degradation of glycogen and starch to metabolites via 1,5-anhydro-d-fructose (1,5AnFru). The enzyme catalyzing the first reaction step of this pathway, i.e., alpha-1,4-glucan lyase (EC 4.2.1.13), has been purified, cloned and characterized from fungi and red algae in our laboratory earlier. In the present study, two 1,5AnFru metabolizing enzymes were discovered in the fungus Anthracobia melaloma for the formation of ascopyrone P (APP), a fungal secondary metabolite exhibiting antibacterial and antioxidant activity. These are 1,5AnFru dehydratase (AFDH) and ascopyrone tautomerase (APTM). AFDH catalyzed the conversion of 1,5AnFru to ascopyrone M (APM), a compound that has been earlier presumed to occur biologically, while APTM isomerized the APM formed to APP. Both enzymes were purified 400-fold by (NH(4))(2)SO(4) fractionation, hydrophobic interaction, ion-exchange and gel filtration chromatography. The purified AFDH showed a molecular mass of 98 kDa on SDS-PAGE and 230 kDa by gel filtration. The corresponding values for APTM was 60 and 140 kDa. Spectrophotometric and HPLC methods were developed for the assay of these two enzymes. To confirm that A. melaloma possessed all enzymes needed for conversion of glycogen to APP, an alpha-1,4-glucan lyase from this fungus was isolated and partially sequenced. Based on this work, a scheme of the enzymatic description of the anhydrofructose pathway in A. melaloma was proposed.

=> d scan

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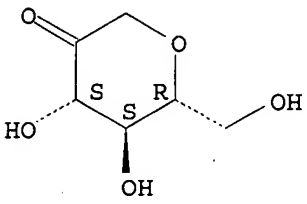

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

ALL ANSWERS HAVE BEEN SCANNED

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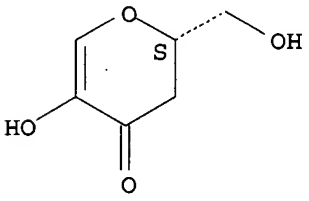
RN 68732-99-0 REGISTRY
ED Entered STN: 16 Nov 1984
CN 4H-Pyran-4-one, 2,3-dihydro-5-hydroxy-2-(hydroxymethyl)-, (2S)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 4H-Pyran-4-one, 2,3-dihydro-5-hydroxy-2-(hydroxymethyl)-, (S)-
OTHER NAMES:
CN 1,5-Anhydro-4-deoxy-D-glycero-hex-1-en-3-ulose
CN Ascopyrone P
FS STEREOSEARCH
MF C6 H8 O4
LC STN Files: AGRICOLA, BEILSTEIN*, BIOSIS, CA, CAPLUS, CASREACT, CHEMLIST, TOXCENTER, USPAT2, USPATFULL
(*File contains numerically searchable property data)

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

35 REFERENCES IN FILE CA (1907 TO DATE)
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
35 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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L2              0 S L1 SSS SAM
L3              2 S L1 SSS FULL
                  E ASCOPYRONE P/CN

     FILE 'REGISTRY' ENTERED AT 14:29:23 ON 16 JUL 2007
                  E ASCOPYRONE P/CN
L4              1 S E3

     FILE 'CAPLUS, MEDLINE' ENTERED AT 14:30:25 ON 16 JUL 2007
L5             35 S L4
L6             12 S L5 AND ?ANHYDROFRUCTOSE?
L7             23 S L5 NOT L6
L8             18 S ASCOPYRONE P (P) ?ANHYDROFRUCTOSE?
L9              6 S L8 NOT L5
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